

REMARKS/ARGUMENTS

Upon entry of the above amendment, Claims 1, 3, 6-28, 37-40, 42, and 47-61 would remain in this application. Claims 2, 4, 5, 29-36, 41 and 43-46 would be canceled (of these, claims 2, 4-5, and 44-46 would be canceled upon entry of this particular amendment). Claims 1, 3, 6-8, 20 would be amended. Claims 58-60 are new claims.

The Requested Amendment

The amendment requested for claim 1 merely incorporates subject matter recited in its dependent claim 2 of record with respect to the hydroxy-substituted dithiocarbamate component having a glycidyl thioether-epoxide moiety or a glycidyl ether-epoxide moiety (viz., R" is R""XCH₂, R""O(C=O)CH₂XCH₂, or R""O(C=O)CH₂CH₂XCH₂ where X is S {thioether} or O {ether}). Dependent claims 6-14 of record individually recite each of these classes of materials. Therefore, this subject matter was before the Patent Office for examination before the final Office Action. It will be appreciated that prior to this amendment that claim 2 of record also had recited R" may be hydrogen or C₁ to C₂₂ alkyl.

The dependencies of claims 3 and 6-8 would be appropriately amended to reflect the amendment made to claim 1.

Claim 20, reciting the affirmative presence of the phosphorous source component in the composition, would be editorially revised to depend from claim 1.

For sake of consistency, independent claim 56 would be amended to recite the same above-indicated recitations being incorporated into independent claim 1.

New claim 58 is based on recitations set forth in claim 29 of record. New claims 59 and 60 are based on recitations set forth in claim 31 of record.

Therefore, no new issue is raised by the amendment that would necessitate additional search or consideration on the part of the Patent Office. No new matter has been introduced. Therefore, it is respectfully submitted that entry of the amendment at this time is appropriate.

Statement of the Substance of the Interview

Applicant thanks the Examiner for the courtesy of the personal interview conducted on May 12, 2004. The Examiner's helpful suggestion made to Applicant to consider refining the epoxide chemistries recited in the claims as a possible way to distinguish the prior art and thereby advance the prosecution of this application was greatly appreciated.

As to matters upon which agreement was not reached at the time of the interview, the following issues were discussed. Applicant's counsel urged that the three prior art references being relied upon in the obviousness rejection lacked a sufficient suggestion to combine a hydroxy-substituted dithiocarbamate and a molybdenum source in an oil-based lubricant composition. In that respect, the case authority of In re Geiger case authority, 2 USPQ2d 1276 (Fed. Cir. 1987), was urged by Applicant's counsel to be applicable to the facts of this case. Applicant's counsel urged that the primary reference to Luciani et al. did not describe the combination of a hydroxy-substituted dithiocarbamate and a molybdenum source in a common oil-based lubricant composition. Applicant's counsel also urged that the secondary reference to Gatto et al. describes a three-component mixture including a molybdenum source, and not a molybdenum source alone, as being necessary for providing the beneficial effects of interest. Applicant's counsel additionally urged that the Ward, Jr. patent did not describe a hydroxy-substituted dithiocarbamate, unlike the present claims. Referencing Examples 14 and 15 of the present specification, Applicant's counsel also urged that the comparative evidence presented therein demonstrated the unexpected results obtained by the present invention, and that the showings were commensurate in scope with the instant claims and that the tested materials were sufficiently representative of the closest prior art of Luciani et al.

The Examiner was understood to emphasize that Luciani et al. alone or in combination with the relied upon secondary references was still considered adequate to suggest the combination of a hydroxy-substituted dithiocarbamate in general and a molybdenum source in a lubricant composition. The Examiner urged that case authority exists which supports his manner of combining the references relied upon for the obviousness rejection.

As to Gatto et al., the Examiner indicated that the instant claims recite "comprising" language, which would not exclude the additional unrecited components included in Gatto's three-component system. The Examiner also was understood to respond that the experimental data in the instant specification was not considered commensurate in scope with at least claim 1 in view of the recitation therein of different components therein in a general manner which covered many compounds that were not included in the comparative testing described in the instant specification.

Regarding the Examiner's above-noted suggestion made at the Interview, the Examiner was understood to suggest that claims may distinguish the prior art of record to the extent they recite the hydroxy-substituted dithiocarbamate component is made with epoxide chemistries which are not described by the Luciani et al. reference, which describes aliphatic epoxides. The Examiner suggested consideration of thioether-epoxide chemistries for instance in this respect. Applicant's counsel indicated that he would consult with the applicant regarding the Examiner's suggestion.

Response to Obviousness Rejection

Claims 1 to 28, 37-40, 42, and 44 to 57 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,698,498 to Luciani et al. combined with U.S. Pat. No. 4,846,983 to Ward, Jr. or U.S. Pat. No. 6,174,842 to Gatto et al. Applicant respectfully traverses for at least the following reasons.

In an effort to avoid introducing undue redundancies in the record, Applicant refers the Examiner to page 16 of Applicant's previous response of January 20, 2004, which provides an overview of some of the embodiments of the present invention.

Upon entry of the above amendment, the independent claims 1 and 56 specifically recite a combination of a molybdenum source, a hydroxy-substituted dithiocarbamate having a thioether or ether epoxide moiety as indicated, and optionally or affirmatively, a phosphorous source, in the context of an *oil-based* composition. Claims 26, 27 and 37 recite *lubricating oil* with a minor amount of the composition of claim 1; and claim 55 recites *crankcase oil* comprising the composition of claim 20.

As pointed out by the Examiner at the Interview, the Luciani et al. reference only appears to describe hydroxyalkyl dithiocarbamates made with an "... epoxide [that] is generally an aliphatic epoxide having at least 2 to about 30 carbon atoms" (col. 6, lines 41-43, Applicant's emphasis added by underlining).

Upon entry of the above amendment, all the remaining independent claims recite a hydroxy-substituted dithiocarbamate component or structure having a structural moiety (R") derived from thioether-epoxide chemistries (see claims 1 and 56) and/or ether-epoxide chemistries (see claims 1, 38-40, 42, 47-49, and 56). These moieties derived from thioether-epoxide and/or ether-epoxide chemistries are not aliphatic epoxides nor moieties derived therefrom. Moreover, there is no suggestion in the relied upon prior art references that it would have been obvious to one of ordinary skill at the time of the present invention to substitute thioether-epoxide or ether-epoxide chemistries for the aliphatic epoxide chemistry used in the hydroxyalkyl dithiocarbamates of Luciani et al.

Turning now to the most recent Office Action, it is understood to maintain the Patent Office's position that the relied upon prior art discloses that hydroxyalkyl dithiocarbamate and molybdenum compounds have been used for the "same purpose" in prior lubricants as "anti-wear and extreme pressure agents," and, therefore, the combining of these two components to form a third material that is to be used for the same purpose would be *prima facie* obvious (Final Office Action, p. 2).

In response, Applicant urges that Luciani et al. restrict their characterization of the optionally used molybdenum sulfide as functioning as a solid lubricant in aqueous systems, and the Luciani et al. reference does not characterize the molybdenum sulfide as an extreme pressure agent and anti-wear additive in general, nor for oil-based compositions in particular (col. 30, lines 50-53). The reference teachings must be considered as a whole. *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 433, 230 USPQ 416 (Fed. Cir. 1986).

Applicant respectfully submits that neither Gatto et al. nor Ward et al. compensate for these deficiencies of Luciani et al. relative to the present claims.

Gatto et al. disclose that a three-component combination of: molybdenum compound and diarylamine and phenate, and within certain concentration ranges, provides a lubricating oil with: improved oxidation control, and reduced tappet wear and decreased piston, ring and valve deposits (col. 1, lines 11-15; col. 4, lines 1-5).

As such, Gatto et al. do not disclose molybdenum compounds *per se* are useful as extreme pressure agents and anti-wear additives. It is submitted that Gatto et al. does not suggest the combination of a molybdenum source *per se* with a hydroxyalkyl-dithiocarbamate for any purpose, common or otherwise. Applicant submits that such a proposed combination of disparate components from different references may or may not be "obvious to try," but that circumstance alone is insufficient to establish a *prima facie* case of obviousness. E.g., see *In re Geiger*, 815 F.2d 686, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987).

Ward Jr. fails to disclose hydroxyalkyl dithiocarbamates in general, and hydroxyalkyl dithiocarbamates having moieties derived from thioether- or ether-epoxide chemistries in particular, so reliance upon it is improper as Ward Jr. relates to a different dithiocarbamate chemistry than that presently claimed (e.g., see col. 3, lines 23-50).

Even assuming a prima facie case of obviousness had been established against the present claims based on a combination of Luciani et al. with Ward, Jr. or Gatto et al., Applicant has submitted objective evidence of nonobviousness in the Examples 14 and 15 of the instant specification, which are adequate to rebut and overcome such a prima facie case.

For instance, referring to Table 1 at pages 31-32 of the instant specification, the wear control data presented shows that combining a molybdenum compound and a separate hydroxy-substituted dithiocarbamate in oil samples containing reduced levels of phosphorus (500 ppm instead of standard 1000 ppm) yielded significantly reduced wear (as measured in terms of Four-Ball Wear Scar) as compared to comparison oil samples that used twice the level of hydroxy-substituted dithiocarbamate but without any molybdenum compound (e.g., see inventive oil sample 10 vs. comparison sample 5; inventive oil sample 19 vs. comparison sample 14; inventive oil sample 28 vs. comparison sample 23; inventive oil sample 37 vs. comparison sample 32).

Similarly, referring to Table 2 at pages 36-37 of the instant specification, the oxidation stability data presented shows that combining a molybdenum compound and an hydroxy-substituted dithiocarbamate in oil samples containing reduced levels of phosphorus (500 ppm again) yielded significantly improved oxidative stability (as measured in terms of PDSC Onset Temp.) as compared to comparison oil samples that used twice the level of hydroxy-substituted dithiocarbamate but without any molybdenum compound (e.g., see inventive oil sample 10 vs. comparison sample 5; inventive oil sample 19 vs. comparison sample 14; inventive oil sample 28 vs. comparison sample 23; inventive oil sample 37 vs. comparison sample 32).

Applicant submits that these objective wear and oxidation stability data described in the instant specification are adequate to rebut any prima facie case of obviousness made against the present claims.

The most recent Office Action disagrees that the data provided in the examples of the instant specification are adequate as the Office Action contends that the showings are based on specific compositions which are not commensurate in scope with the present claims, and because the showing was not generated by a comparison to the cited prior art.

Applicant has provided comparative data in the specification that is reasonably representative of the claimed materials, and includes data that is reasonably representative of the closest prior art. For instance, Example I of Luciani et al. (col. 27) describes a lubricant prepared by incorporating 3% by weight of the product of Example 1, which generally is a hydroxyalkyl dithiocarbamate, into a SAE 10W-40 lubricating oil. Examples 14 and 15 of the instant specification include tested oil samples with hydroxydithiocarbamates used alone, or in combination with a molybdenum compound, in SAE Grade 5W-30 type motor oil.

Applicant submits that the comparison tests in instant Examples 14 and 15 of the instant specification which included hydroxydithiocarbamates used alone and not in combination with a molybdenum compound, are representative of the closest prior art in all important respects.

In view of the foregoing, Applicant requests entry of the amendment, and reconsideration and withdrawal of the rejection. Applicant requests that a timely Notice of Allowance be issued in this case.

Appln. No. 10/067,978
Amdt. dated May 14, 2004
Reply to final Office Action of April 6, 2004

If the Examiner believes that a teleconference would be useful in expediting the prosecution of this application, the official is kindly invited to contact Applicant's undersigned representative of record.

Respectfully submitted,

Date: May 14, 2004

By Ramon R Hoch
Ramon R. Hoch
(Reg. No. 34,108)
Tele: (202) 419-7000

Correspondence Address:

Mr. Dennis H. Rainear
Patent & Trademark Division
Ethyl Corporation
330 South Fourth Street
Richmond, Virginia 23219
Tele: (804) 788-5516